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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/060,058	01/31/2002	Masaki Ueno	107355-00052	6576

7590 03/23/2004

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EXAMINER

NGUYEN, TU MINH

ART UNIT PAPER NUMBER

3748

DATE MAILED: 03/23/2004

18

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Applicati n No.

10/060,058

Applicant(s)

UENO ET AL.

Examiner

Tu M. Nguyen

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-- Th MAILING DATE of this communication app ars on the cover sheet with the corr spondenc address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

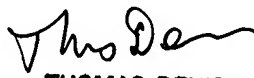
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                         |                                                                             |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                                |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____                                                             | 6) <input type="checkbox"/> Other: _____                                    |

Serial No. 10/060,058  
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This office action is a re-mail of the action mailed 12/10/03. The action mailed on the above date was not signed by a Supervisory Patent Examiner as required. Accordingly, this deficiency has been corrected. The Shortened Statutory period for response is reset to run from the mailing date of this office action.

  
THOMAS DENION  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700

### **DETAILED ACTION**

1. In view of an Applicant's Appeal Brief filed on September 22, 2003, PROSECUTION IS HEREBY REOPENED. A new non-final rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office Action is non-final) or a reply under 37 CFR 1.113 (if this Office Action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Overall, claims 1-7 are pending in this application.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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3. Claims 1, 4, 6, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka et al. (5,956,947).

Re claim 1, as shown in Figures 1-7, Tanaka et al. disclose an exhaust emission control system of an internal combustion engine for cleaning exhaust gases discharged from the internal combustion engine, comprising:

- an exhaust system defining a main exhaust passage (path A in Figure 2) connected to an internal combustion engine (1), and a bypass exhaust passage (path B) which branches off and joins back to the main exhaust passage;

- a switching device (40, 41, 43, 44) switching an exhaust gas flow path to either of the main exhaust passage and the bypass exhaust passage;

- an adsorbent material (42) disposed within the main exhaust passage (path A) for adsorbing unburned constituents (hydrocarbon) of exhaust gases introduced into the main exhaust passage and releasing the unburned constituents as temperature increases; and

- a control device (100) operable to control the switching device,

wherein the control device switches the exhaust gas flow path to the main exhaust passage (path A) when the adsorbent material adsorbs the unburned constituents (see steps 402-406 in Figure 4; lines 28-37 of column 8; and Figure 5), the control device switches the exhaust gas flow path to the bypass exhaust passage (path B), only when the adsorbed unburned constituents is released from the adsorbent material (see steps 404 with NO answer, 410, 411, 412 with NO answer, and 409; line 38 of column 8 to line 16 of column 9; and Figure 6), and the control device switches the exhaust gas flow path to the main exhaust passage (path A) when a

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release of the adsorbed unburned constituents is completed (see steps 412 with YES answer, 413, 414 with YES answer, and 406; lines 17-52 of column 9; and Figure 5).

Re claim 4, in the control system of Tanaka et al., the switching device has a switching valve element (40) adapted to freely move between an open position where the main exhaust passage is opened whereas the bypass exhaust passage is closed, and a closed position where said main exhaust passage is closed whereas the bypass exhaust passage is opened,

- a biasing device (43, 44) for biasing the switching valve element to the open position,

and

- an actuator (41) for driving the switching valve element from the open position to the closed position against the biasing device.

Re claim 6, in the control system of Tanaka et al., the switching device further comprises:

- a rotational shaft (44) adapted to be driven to rotate by the actuator; and
- an arm (43) connected between the switching valve element and the rotational shaft for driving the switching valve element in conjunction with a rotation of the rotational shaft,

wherein the rotational shaft and the arm are disposed in the bypass exhaust passage.

Re claim 7, in the control system of Tanaka et al., the adsorbent material includes a zeolite (line 44 of column 5).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rao et al. (U.S. Patent 5,396,764) in view of Tanaka et al.

Re claim 1, as shown in Figures 1A, 3, and 6-8, Rao et al. disclose an exhaust emission control system of an internal combustion engine for cleaning exhaust gases discharged from the internal combustion engine, comprising:

- an exhaust system defining a main exhaust passage (where filter (30) is located) connected to an internal combustion engine (12), and a bypass exhaust passage (annular passage surrounding filter (30)) which branches off and joins back to the main exhaust passage;
- a switching device (156, 172, 174, 176) switching an exhaust gas flow path to either of the main exhaust passage and the bypass exhaust passage;
- an adsorbent material (30) disposed within the main exhaust passage for adsorbing unburned constituents (hydrocarbon) of exhaust gases introduced into the main exhaust passage and releasing the unburned constituents as temperature increases; and
- a control device (not shown but obviously must have) operable to control the switching device,

wherein the control device switches the exhaust gas flow path to the main exhaust passage when the adsorbent material adsorbs the unburned constituents (see lines 10-24 of column 5; and Figure 7), and the control device switches the exhaust gas flow path to the bypass exhaust passage, only when the adsorbed unburned constituents is released from the adsorbent material (see lines 31-62 of column 5; and Figure 8).

Rao et al., however, fail to disclose that the control device further switches the exhaust gas flow path to the main exhaust passage when a release of the adsorbed unburned constituents is completed.

As depicted in Figures 1-7, Tanaka et al. teach a similar system to remove hydrocarbon (HC) from the exhaust gas. Initially, they open the flow path A when the engine is still cold so that HC in the exhaust gas can be adsorbed by the adsorbent (42). When the engine is hot, the flow path A is closed and the exhaust gas is allowed to mostly flow through the flow path B to heat up and desorb the HC from the adsorbent. When HC is fully desorbed from the adsorbent, a fuel cut operation is performed (step 414 with YES answer), and the oxygen rich exhaust gas is allowed to flow through the flow path A (step 406) so that soot trapped in the adsorbent can be burned off effectively (see lines 32-52 of column 9). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Tanaka et al. in the system of Rao et al., since the use thereof would have provided an effective means to remove soot which can clog up the adsorbent material.

Re claim 2, as clearly shown in Figure 6, the exhaust system in the modified control system of Rao et al. has the bypass exhaust passage including an annular passage portion



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surrounding in an annular fashion a portion of the main exhaust passage, on which the adsorbent material (30) is disposed.

Re claims 3 and 4, as shown in Figure 2 of Tanaka et al., the switching device in the modified control system of Rao et al. has a switching valve element (40) adapted to freely move between an open position where the main exhaust passage is opened whereas the bypass exhaust passage is closed, and a closed position where said main exhaust passage is closed whereas the bypass exhaust passage is opened,

- a biasing device (43, 44) for biasing the switching valve element to the open position,

and

- an actuator (41) for driving the switching valve element from the open position to the closed position against the biasing device.

Re claims 5 and 6, as shown in Figure 2 of Tanaka et al., the switching device in the modified control system of Rao et al. further comprises:

- a rotational shaft (44) adapted to be driven to rotate by the actuator; and
- an arm (43) connected between the switching valve element and the rotational shaft for driving the switching valve element in conjunction with a rotation of the rotational shaft,

wherein the rotational shaft and the arm are disposed in the bypass exhaust passage.

Re claim 7, in the modified control system of Rao et al., the adsorbent material includes a zeolite (line 64 of column 5).

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*Communication*

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (703) 308-2833.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (703) 308-2623. The fax phone number for this group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1148.

*Tu M. Nguyen*

TMN

Tu M. Nguyen

March 22, 2004

Patent Examiner

Art Unit 3748

*Thomas Denion*

THOMAS DENION  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700